Allowing XRF Testing for CPSIA Compliance Could Save $3.7 Billion and Save Small Businesses

The following was written by Seth Goldberg, President of Essco Safety Check, a product safety firm based in Redmond, WA. Seth has calculated the potential savings of using XRF scanning technology instead of the destructive chemical dissolution tests mandated by the CPSIA. In particular, he finds that small businesses would save tremendously with no erosion of product safety. The Handmade Toy Alliance believes that this approach would be a tremendous help to small businesses struggling to comply with the testing requirements of the CPSIA.

This is an objective view of how the Consumer Product Safety Improvement Act (CPSIA) is potentially affecting small businesses, the testing costs and methods, as well as a common sense approach to certification and job creation.

The CPSIA was written in 2008 to ensure that children's products don't contain harmful amounts of certain elements, like lead and cadmium. All children's products must eventually be certified by an accredited 3rd party laboratory who utilizes specific testing methods. With these laboratory results a company can create the required general certificate of conformity (GCC).

There is also a stay of enforcement with the CPSIA until 2/10/11 for the GCC on all children's products other than those that are painted, children's jewelry, cribs or pacifiers. Additionally, there is regulation in total content of lead and regulation in soluble content for eight elements (including lead), this method (soluble) ASTM F-963 is currently voluntary. There is also regulation for the amount of certain phthalates, a chemical added to plastics to make them softer.

All current approved testing methods are destructive, they are very costly, can take extensive periods of time to get results. This testingcan only done by a select group of laboratories (only 227 worldwide and 60 within the United States, many of these labs have one parent company).

While researching this article, I attempted to find an economic impact analysis that was performed for CPSIA, but was unable to find one. I even contacted a state representative with Washington State, in April 2008, four months prior to the federal CPSIA regulation, Washington State passed the Children's Product Safety Act, but apparently no impact study was done either.

How does one figure out the economics behind this piece of legislation?

I thought to try and simplify things and try to figure out how many businesses would be impacted, what size of business they are and ultimately how products that would be affected. I will compare an approximate cost of traditional testing methods, to a technology that is mobile and non-destructive (X-Ray Fluorescence). And I will show how many jobs could be potentially created.

Number of businesses potentially affected by the CPSIA

Businesses that are potentially affected by the CPSIA include; Manufacturers, importers, retailers, charities and re-sellers who make, distribute in commerce, children's products, those designed and marketed to children 12 and under.

I found two main sources for this data, the US Census and the North American Industry Classification System (NAICS). The US Census numbers were from 2006 and the numbers from the NAICS are from 2009.

Here is data from the North American Industy Classification System (NAICS) their data was used to calculate the number of potentail businesses affected by the CPSIA.

Total number of manufacturers potentially affected by the CPSIA in the United States 52,544***
Total number of wholesalers potentially affected by the CPSIA in the United States 125,624***
Total number of retailers potentially affected by the CPSIA in the United States 511,240***
Total number of businesses potentially affected by the CPSIA according to the NAICS 689,408***

The US Census provided data on the size of the businesses affected and is broken down by percentage. My use and definition of small business is based on <500 href="http://www.essco-safetycheck.com/CPSIA" target="_blank">CPSIA.

Total Manufacturers potentially affected have 0-4 employees 46.3%, <20>

What does all of this mean? More small businesses are going to be affected by this regulation than large businesses. 40% of all businesses potentially affected by the CPSIA are very small with only 0-4 employees. 61% of all businesses potentially affected by the CPSIA have less than 20 employees. All businesses classified as small businesses, less than 500 employees, 71% of them potentially will be affected by the CPSIA.

Number of products potentially needing testing

Attempting to figure out the amount of SKUs or total products potentially affected was an even larger task than trying to figure out the number of businesses potentially affected. There is no single source of data about the number of products manufactured or sold, so I took a slightly different approach. I researched a few key consumer websites and contacted a few experts to make my assumptions.

Yes, I said assumptions. The problem with figuring out some specifics is that I'm guessing on a few key points. Here we go!

I first visited ETSY.com. ETSY.com is a website that sells handmade consumer products, you know, made by your friends and sold online. When I looked on their site earlier this week, they had over 280,000 children's products listed.

I decided to go to two other major consumer product retail sales websites, Buy.com and Amazon.com. At Buy.com when I tallied all the potential products that could be affected by the CPSIA I found over 66,000 different products. On Amazon.com the amount was much more. I will add one caveat, at amazon.com they did not separate jewelry into a product category "children's jewelry" so I used the total of all jewelry in my tally. With all jewelry listed and all other products I found that could be potentially affected by the CPSIA, the total was almost 1.18 million products on Amazon.com. Without the jewelry the total was over 150,000 products.

In a conversation I had with a regulatory agency employee in the State of Washington, she suggested that the total number of potential products on the market is in the tens of millions.

Based on these numbers and suggestions, I'm going to split the middle and suggest that there are five million different products on the market that could be impacted by the CPSIA.

The Cost Breakdown

First we need to look at the traditional testing methods. I'm only going to look for three things, amount of lead, amount of cadmium and phthalate testing (traditionally this is tested using a Gas Chromatography machine). For this analysis, disregard all other potential costs.

Traditional ICP-MS testing for heavy metals can easily be hundreds of dollars per test, per color, per substrate. I have been quoted ranges from $75 to $300 per test for heavy metal testing; phthalate testing has been a bit lower from $75 to $150. For this comparison, I'm going to use the low end of $75 per test.

I am also going to assume that every item needs to be tested a total of five times. Every product is a little be different, they're made with different colors, different substrates and materials. Take an old childhood favorite Rubik's Cube. It has six different colors and is made of one substrate (black plastic), that item would require a minimum of seven tests. As I said, I'm going to use a five test average.

If there are five million items and each has to be tested five times, that is a total of twenty-five million tests. Considering we are looking for three things (lead, cadmium and phthalates at $75 per test) the total for traditional testing methods would be $5.625 billion.

If all the accredited laboratories split this testing evenly, that would be approximately $25 million per lab worldwide.

Other testing method

There is a technology that is mobile and non-destructive that can simultaneously look for lead, cadmium and PVC in one simple push of the button. Unfortunately, it is not the approved testing method for the CPSIA.

This technology is called X-Ray Fluorescence (XRF) and is readily available to use for consumer product testing. It is the approved testing source for HUD Lead inspections, and is used by the EPA, FDA and CPSC.

Data that I have collected from over 8000 test results using XRF analyzers shows that of all consumer products tested only 16.3% are found with any amount of lead, 4.3% are found with any amount cadmium and 11.1% are identified to be made of PVC. In total only 31.7% of all consumer products I have tested using XRF analyzers have been found with lead, cadmium or PVC, yet all products are required to be tested destructively.

I used these percentages to help figure out the comparable numbers.

Comparison

If all products are tested by traditional testing methods using ICP-MS and GC machines the cost for testing for lead, cadmium and PVC would be $5.625 billion. However, if you were to use XRF analyzers to screen all these products, at a cost average of $5.00 per test the total cost would be $125 million.

At this point, all items that tested positive for lead, cadmium or PVC should be further tested by the traditional testing methods. Using the percentage of items found with lead, cadmium or PVC (31.7%) traditional testing methods would cost $1.784 billion. If you add up the XRF screening and then the re-testing by traditional testing methods, the costs would be approximately $1.9 billion.

That would be a cost savings of $3.7 billion or 66.1% for consumer product testing for the CPSIA.

That is a tremendous amount of money that these businesses can put back to work in our economy, hiring people, investing, building business all while keeping compliant with the regulations.

Number of jobs created

I'm going to specifically look at this as the formation of XRF Certified Consumer Product Inspectors. If a total of twenty-five million tests need to be done annually, and each inspector can do two hundred tests per day, two hundred and fifty days per year, that could create five hundred jobs. That is not including managers and office staff to handle additional work. Overall, I would suspect that close to one thousand jobs could be created, but that is only based on five million products that need to be tested.

What if that total number is closer to twenty million? That would potentially be upwards of four thousand jobs and a potential economic impact of close to $15 billion going back in to the pockets of businesses of which almost 71% are considered small businesses.

Conclusion

What I'm suggesting is a common sense approach to testing and the certification that consumer products meet the regulations of the CPSIA. If XRF testing is approved to simply screen products for certain heavy metals and PVC, and only those found to contain these elements or chemicals would be further tested, there can be a huge positive economic impact for small businesses, as well as the creation of jobs.

***These figures were calculated from two sources, the US Census and the NAICS.